

p. 479 #31

$$\hat{p} = 46/220 = 0.2091 \quad p = 30/220 = 0.1364 \quad n = 220$$

(a) $H_0: p = 0.1364$

$H_a: p > 0.1364$

Conditions:

- | | |
|------------------------|---|
| 1) SRS | assumed representative |
| 2) np & $nq \geq 10$ | 30 & $190 \geq 10$ |
| 3) $pop \geq 10n$ | there are more than 2200 people that
were in Utah at that time |

Conditions met --> Normal Model --> 1 prop Z test

$$Z = \frac{0.2091 - 0.1364}{\sqrt{\frac{(0.1364)(0.8636)}{220}}} = 3.1434$$

$$P(Z > 3.1434) = 8.352 \times 10^{-4}$$

We reject H_0 b/c p-value of 8.352×10^{-4} is less than $\alpha = 0.05$.

We have sufficient evidence that the true % of people dying from cancer in Utah in 1955 is greater than 0.1364. Thus, there is evidence that the death rate from cancer among the movie crew is unusually high.

(B) No, this does not prove anything. It just shows us that we have evidence that the movie crew's death rate from cancer was unusually high.